

BPM v7.5 – Simulation in Process Designer

Lab Exercise



Lab Number 6

Contents

LAB 6	SETTING UP SIMULATION OF A BPD IN PROCESS DESIGNER.....	4
1.1	SETUP.....	4
1.1.1	START THE PROCESS DESIGNER.....	4
1.2	PART 1 – IMPORT THE TOOLKIT FOR THE BUILD FROM SCRATCH SOLUTION	5
1.2.1	IMPORT THE COMPLETED BUILD FROM SCRATCH SOLUTION.....	5
1.3	RESET HISTORICAL DATA	6
1.3.1	USE THE PROCESS ADMIN CONSOLE.....	6
1.4	PART 2 – SIMULATION	7
1.4.1	SIMULATION VALUES FOR ACTIVITIES AND SWIM LANES.....	7
1.4.2	RUN A SIMULATION	15
1.4.3	SHOW DIFFERENT HEAT MAPS	21
1.5	SUMMARY	22

Lab 6 Setting up Simulation of a BPD in Process Designer

This lab will introduce you to the simulation function in Process Designer (PD). You will see how simulation values are set within PD, run a simulation, and see a heat map of the process. We will use the Build From Scratch process from the first lab in the Proof of Technology.

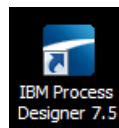
The first experience with any activity in the lab will be completely documented with screen shots. If the same type of activity is repeated, subsequent steps will contain less detail. If you get stuck, either refer back to the early example, or ask for help. The IBMers in the room are here to help – don't hesitate to ask!

1.1 Setup

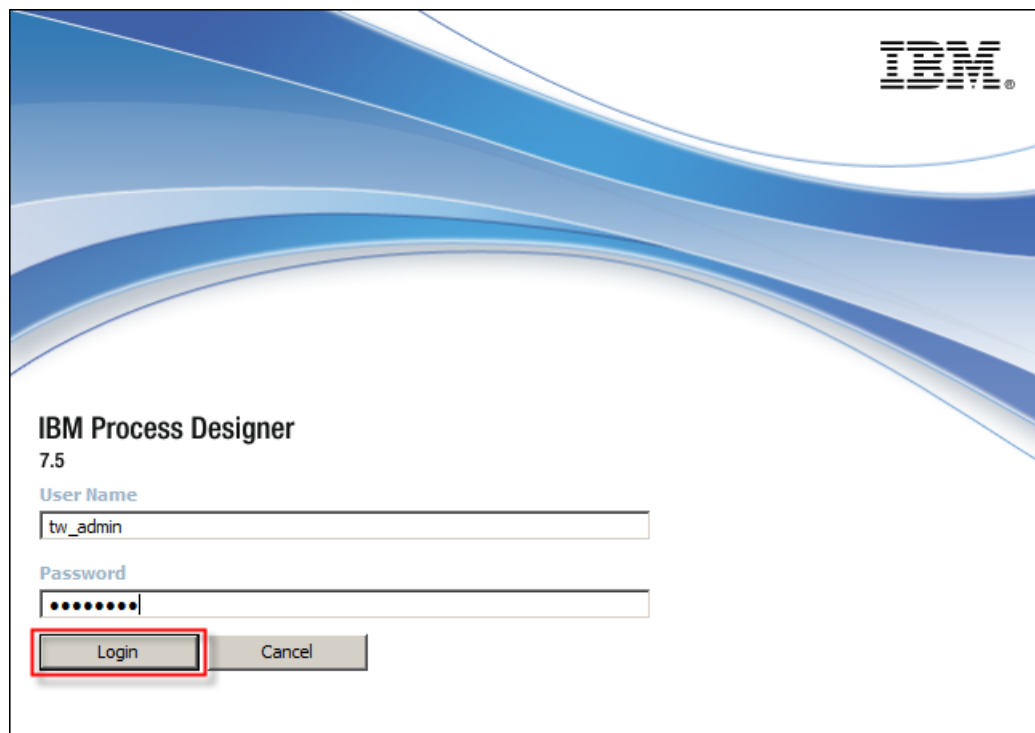
In this section, you will start the IBM Process Designer.

1.1.1 Start the Process Designer

1. If the Process Designer is not running, double-click on the *IBM Process Designer* icon on the desktop. It might take a couple of minutes for the login window to appear:



2. Enter *tw_admin* as the user name and as the password, then click *Login*:

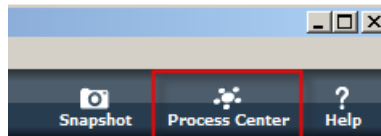


1.2 Part 1 – Import the Toolkit for the Build from Scratch Solution

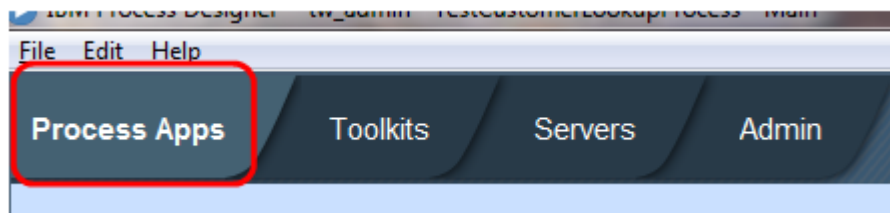
We will import the solution to the Build from Scratch process and build Monitoring from on that process flow. If you already have a tested Build from Scratch process that you would like to use for building monitoring capability then you may skip this section.

1.2.1 Import the Completed Build from Scratch Solution

- ___1. If you are not on the *Process Application* screen, click on the *Process Center* icon in the upper right-hand corner of the window.

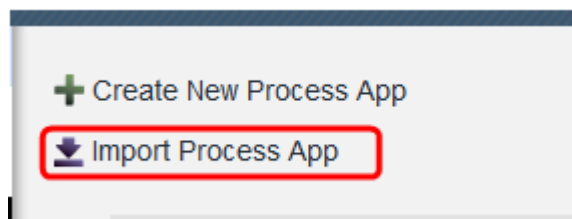


- ___2. Click on the *Process Apps* tab in the upper left-hand corner of the window, and then click on *Import Process App*.

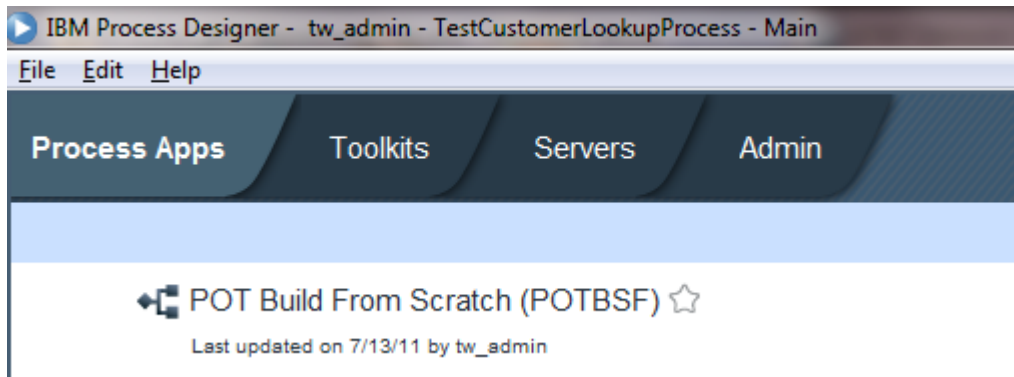


- ___3. Import the toolkit:

___a.



- ___b. Browse to c:\labfiles\BFS\POT_Build_From_Scratch_Solution.twx file and import it.
- ___c. You should now see the application listed in the Process Apps view.



__4. Click on Open in Designer

1.3 Reset Historical Data

1.3.1 Use the Process Admin Console

You may have to log into the Process Admin Console as tw_admin to reset the pre-loaded historical data.

Resetting Historical Data

You can reset historical data via the Process Admin Console. **Start->Programs->IBM->BPM Advanced 7.5->Profiles->ProcCtr01->Process Admin Console.**



- ☐ In the left navigation pane, select **SA UTILITIES**
→ **Set OTB Report Distribution**
- ☐ Under Settings use the drop-down list to select the
Bpd Name as **Order Fulfillment**.
- ☐ Click **OK**
- ☐ After you see the Success! Message, log out of
the Process Admin Console and close the browser

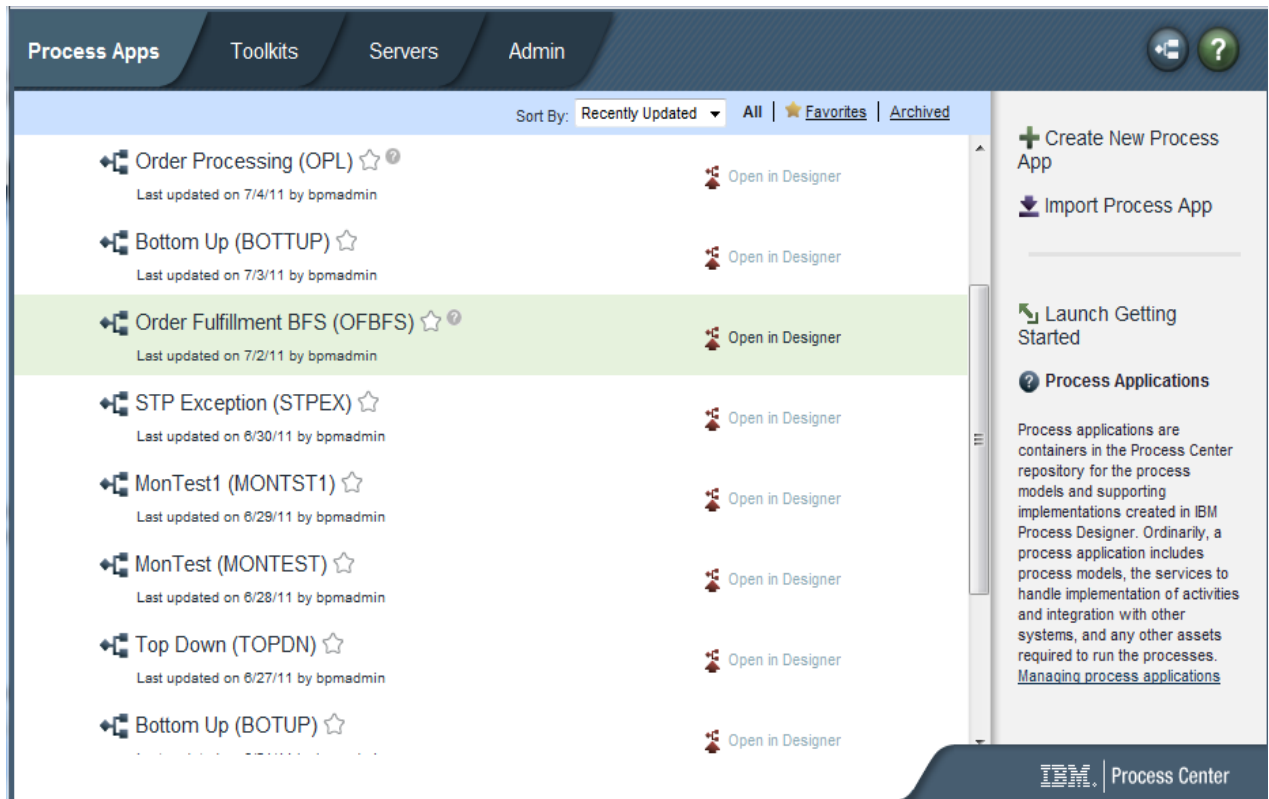
1.4 Part 2 – Simulation

In this section, you will see how values for simulation are set within Process Designer, run a simulation, and see a heat map of the process.

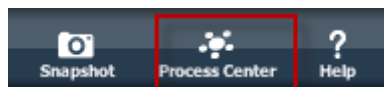
1.4.1 Simulation values for activities and swim lanes

- __5. Take a look at how simulation values are set within PD
 - __a. If the Process Designer is not open, open it, and login as **tw_admin** and password **tw_admin**.

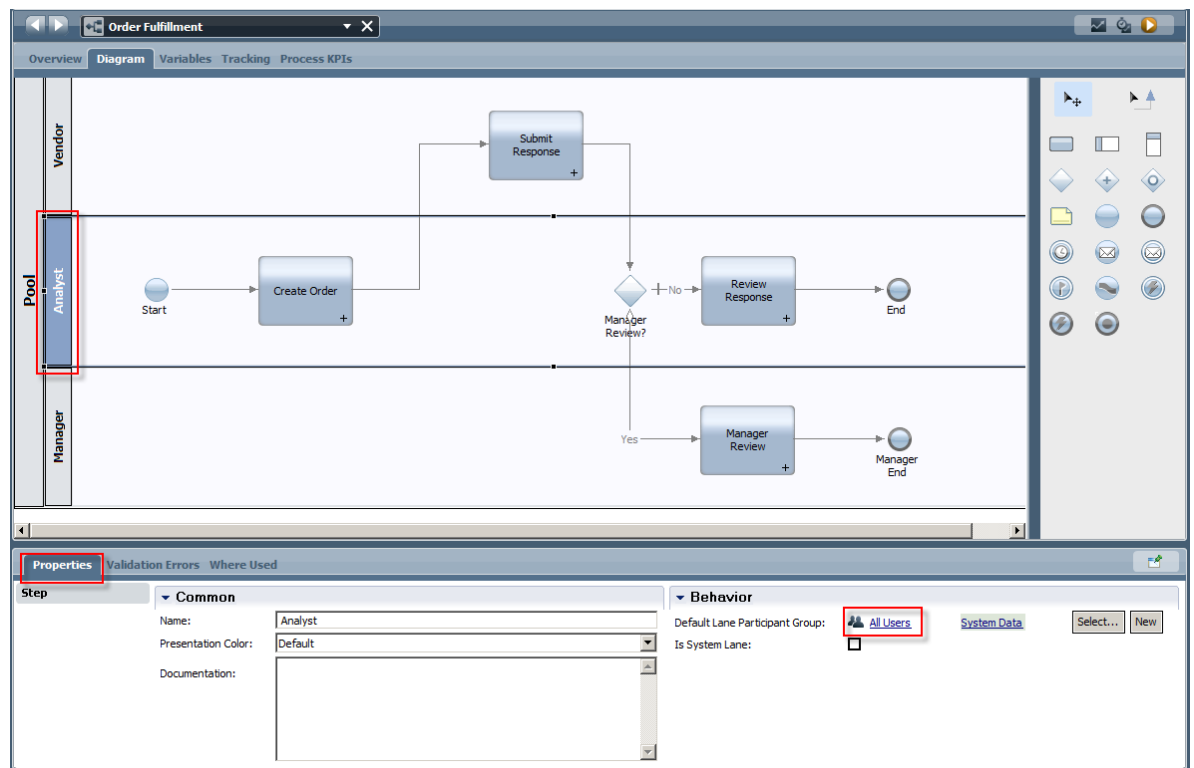
- __b. Open the Order Fulfillment Demo. If you just started Process Designer, it will open up to the **Process Center**. On the same line as Order Fulfillment Demo, select **Open in Designer**:



- __c. If you had another application open in the Process Designer, you will first go to the Process Center by clicking on Process Center link on the top right, then click the **Open in Designer** link as directed above



- __d. Open the Order Fulfillment BPD by clicking **Processes**, then under **Business Process Definitions**, double-click **Order Fulfillment**
- __e. Examine the Simulation properties for the **Analysts** participant group:
- __i. Click on the **Analysts** swim lane
 - __ii. Go to **Properties** and click on **All Users**. This will open the Participant Group of Analysts.



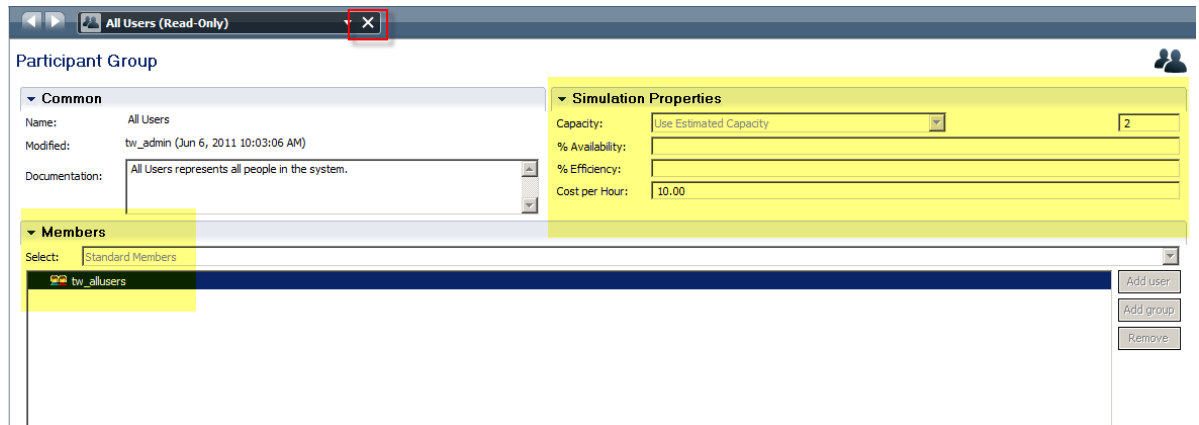
Participant Groups

Participant group lane assignments ensure that any activities that are not routed to a specific group or user have an automatic default assignment.



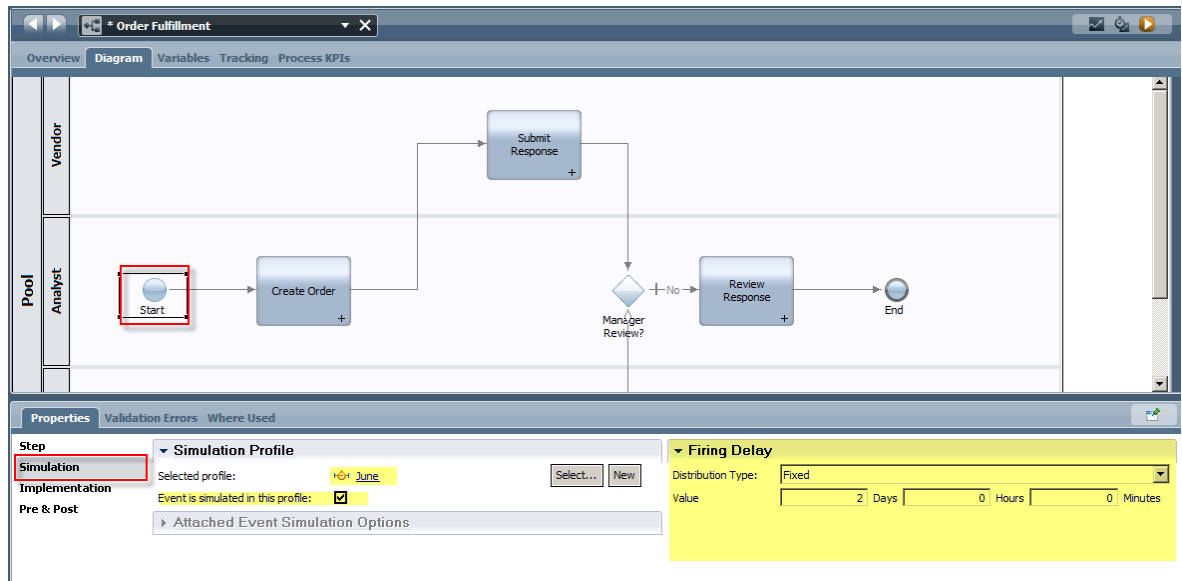
Each lane that you create is assigned to the **All Users** participant group by default. You can use this default participant group for running and testing your BPD in the Inspector. The All Users participant group includes all users who are members of the **tw_allusers** security group, which is a special security group that automatically includes all users in the system. See the Administration Guide for more information about the **tw_allusers** security group. See the Process Designer User Guide topic: **Creating a participant group** for more information about defining the users that belong to a participant group.

- ___f. You can see the **Simulation Properties** that have been set for this group and the **Members** of the group. The Simulation Properties allow you to set Capacity, Availability, Efficiency, and Cost per Hour. The Simulation Properties for the Order Fulfillment process application were already defined. When you are done, go ahead and close **All Users** by clicking .



- ___g. Similar to Participant Group simulation properties, you can set simulation properties for items in a Business Process Definition (BPD). A BPD is a reusable model of a process that defines what is common to all run-time instances of this process model. For example, the Start and End Events, estimates for task durations and probabilities for gateways. These values could be saved to a Simulation profile that you could reuse in your environment.

- __h. Look at the simulation properties of a **Start Event**, Manual Start:
- __i. Highlight **Start**
- __ii. Go to the Properties tab and click on **Simulation**.
- __iii. Note the Selected profile is **June**, which is a custom simulation profile, created for the Order Fulfillment process application. The Event is simulated in this profile is **selected**, and the Firing Delay of this start event used a **Fixed** Distribution Type, which fires every two days:



Simulation Profiles

A **Simulation Profile** allows you to provide for each item in a process model, estimates for task duration, probabilities for gateways, and other values on which to base your simulations. IBM BPM provides a default simulation profile that you can use or you can create one or more new profiles. The advantage of profiles is that they let you specify and save different estimates for specific situations that you know might occur in your environment.



New simulation profiles can be created by clicking **New**. Note that you can select a different profile for each activity. Therefore, if you choose to create a new profile from an activity, this profile does not get applied to all activities in the process. See the Process Designer User Guide topic: **Setting up simulation profiles** for instructions of how to create a new profile.

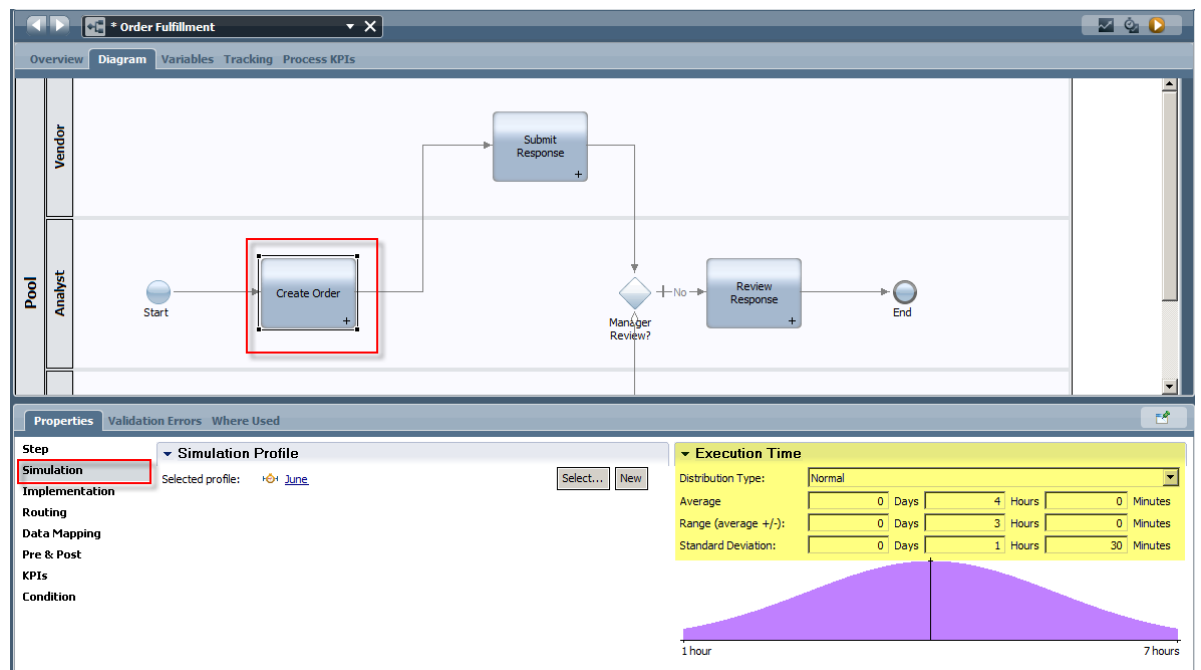
The Distribution Type can be set to Fixed, Uniform, or Normal by using the drop-down:

Distribution Type: 

The following table defines the different Distribution Types.

Distribution Type	Values	IBM BPM Optimizer...
Fixed	The execution time in days, hours, and minutes.	Uses the same specified value each time.
Uniform	The average execution time and the range (average plus or minus the values that you specify) in days, hours, and minutes.	Is equally likely to use each value in the specified range.
Normal	The average execution time, the range (average plus or minus the values that you specify), and the standard deviation in days, hours, and minutes.	Is more likely to use values within the specified range that are closer to the specified average instead of values that are more or less than the average.

- i. View the simulation properties of the **Create Order** activity. Note that it uses a Normal Distribution. You can change the values and note the changes in the Normal curve.

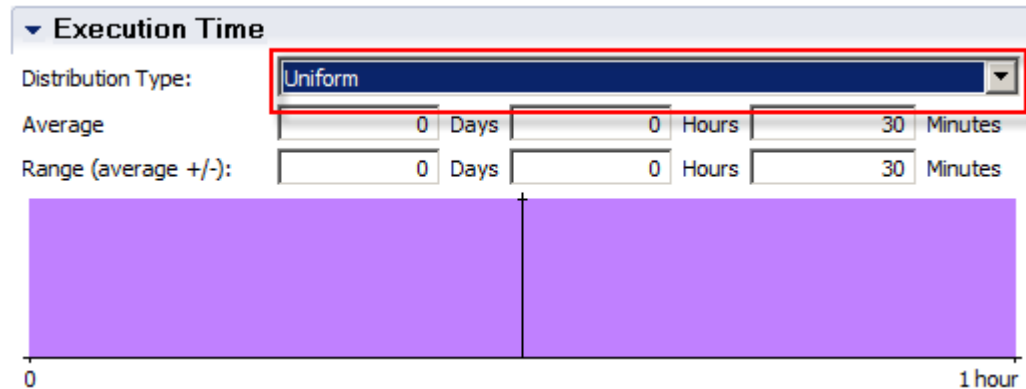


The screenshot shows the IBM BPM 7.5 POT interface for the 'Order Fulfillment' process. The 'Diagram' tab is active, showing a process flow starting with 'Start', followed by 'Create Order' (highlighted with a red box), then 'Submit Response', a decision 'Manager Review?', and finally 'Review Response' leading to 'End'. The 'Properties' panel is open, showing the 'Simulation' tab. Under 'Simulation Profile', the 'Selected profile' is 'June'. The 'Execution Time' section is expanded, showing the following settings:

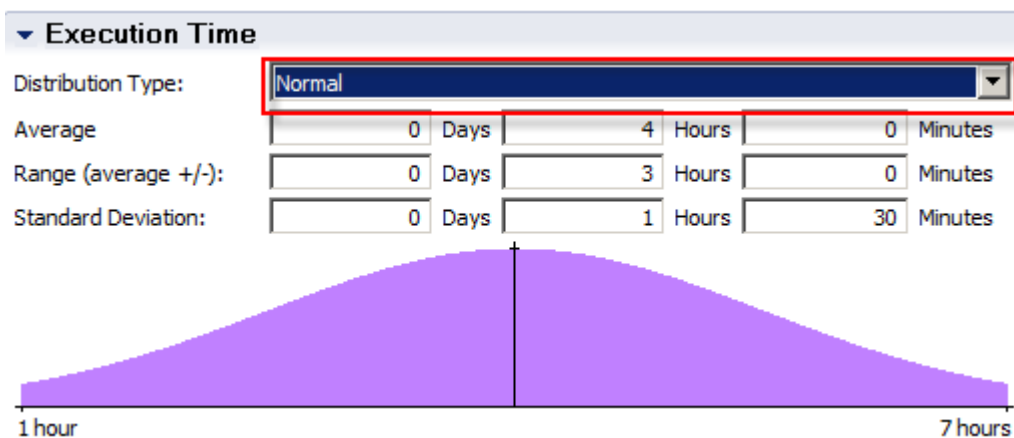
- Distribution Type: Normal
- Average: 0 Days 4 Hours 0 Minutes
- Range (average +/-): 0 Days 3 Hours 0 Minutes
- Standard Deviation: 0 Days 1 Hours 30 Minutes

A normal distribution curve is shown below the input fields, with the x-axis ranging from 1 hour to 7 hours.

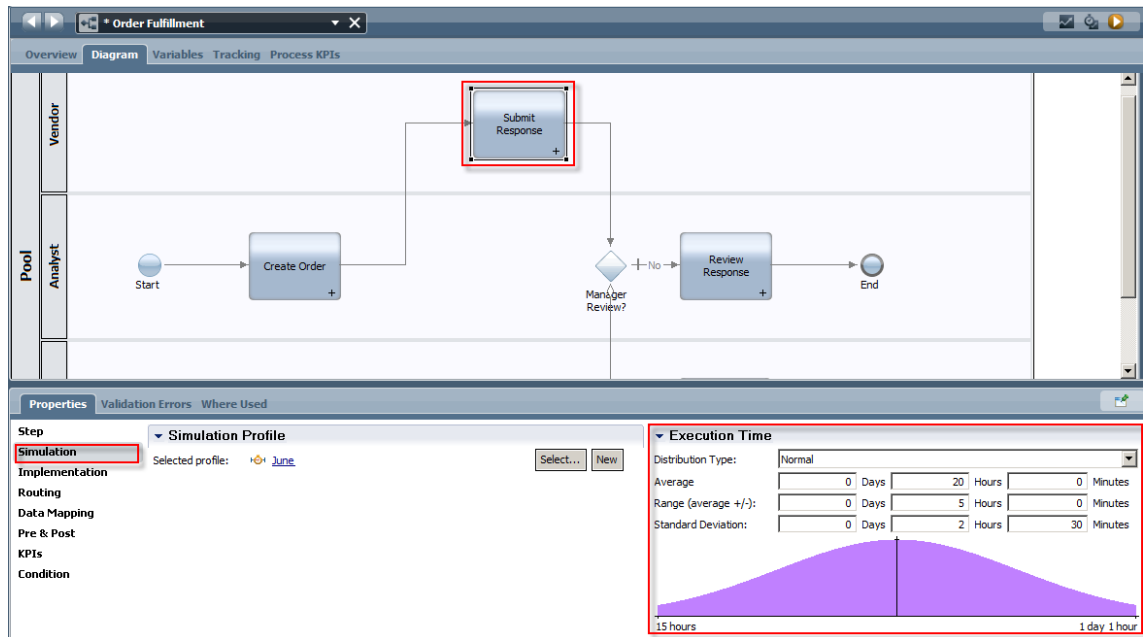
- ___j. Change the distribution type to **Uniform** by using the drop-down. Note the change:



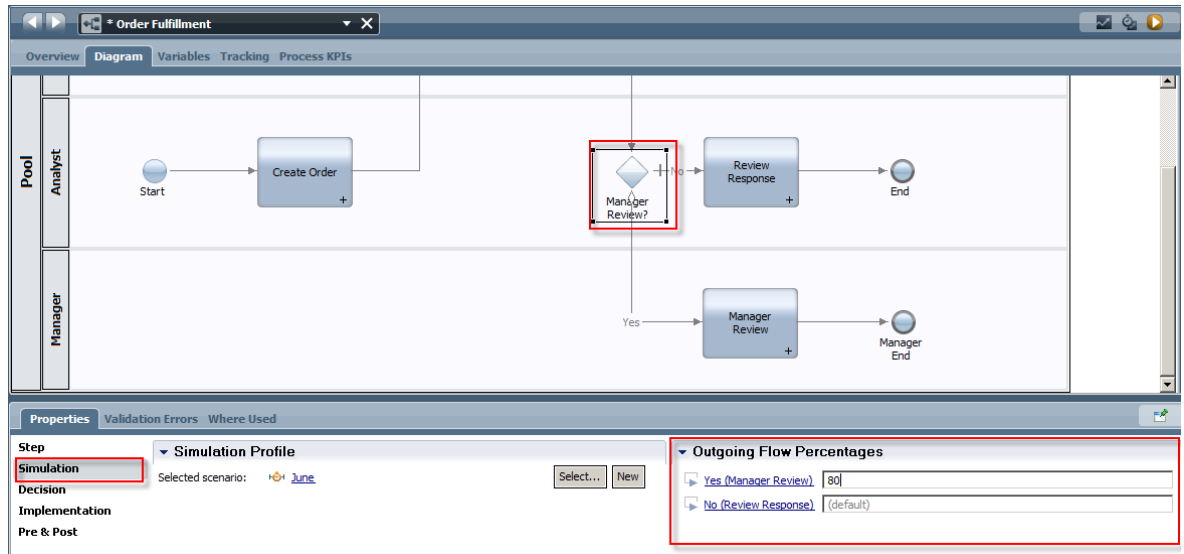
- ___k. Change the distribution type back to **Normal**:



- __l. Look at the simulation profile for the **Submit Response** activity:



- __m. A Decision Gateway's simulation properties are about outgoing flow percentages (what percent of the time each flow will be followed). Look at the simulation profile for the **Manager Review?** Decision gateway. The Yes flow will be followed 80% of the time.

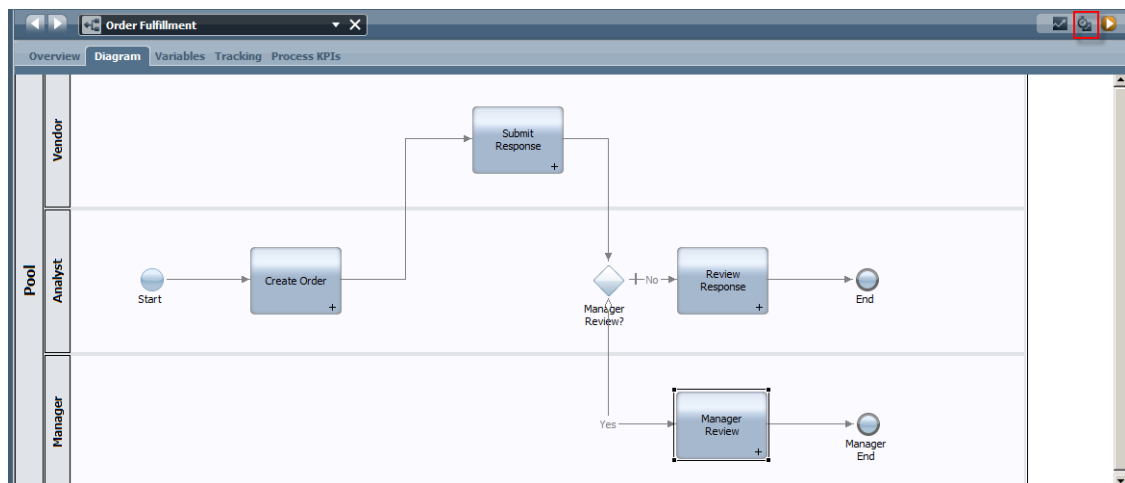


- ___n. **Close** the Order Fulfillment BPD by clicking close. Do **NOT** save any changes you may have made to the BPD.



1.4.2 Run a simulation

- ___6. Follow these steps to run a simulation of the Order Fulfillment process.
- ___a. Open the **Order Fulfillment** BPD, and then clicking the Start Simulation  icon on the top right.



- ___b. PD will switch to the Optimizer perspective. The table below describes the different areas of this Perspective. (**Note: the Visualization Mode is set to Execution Time**)

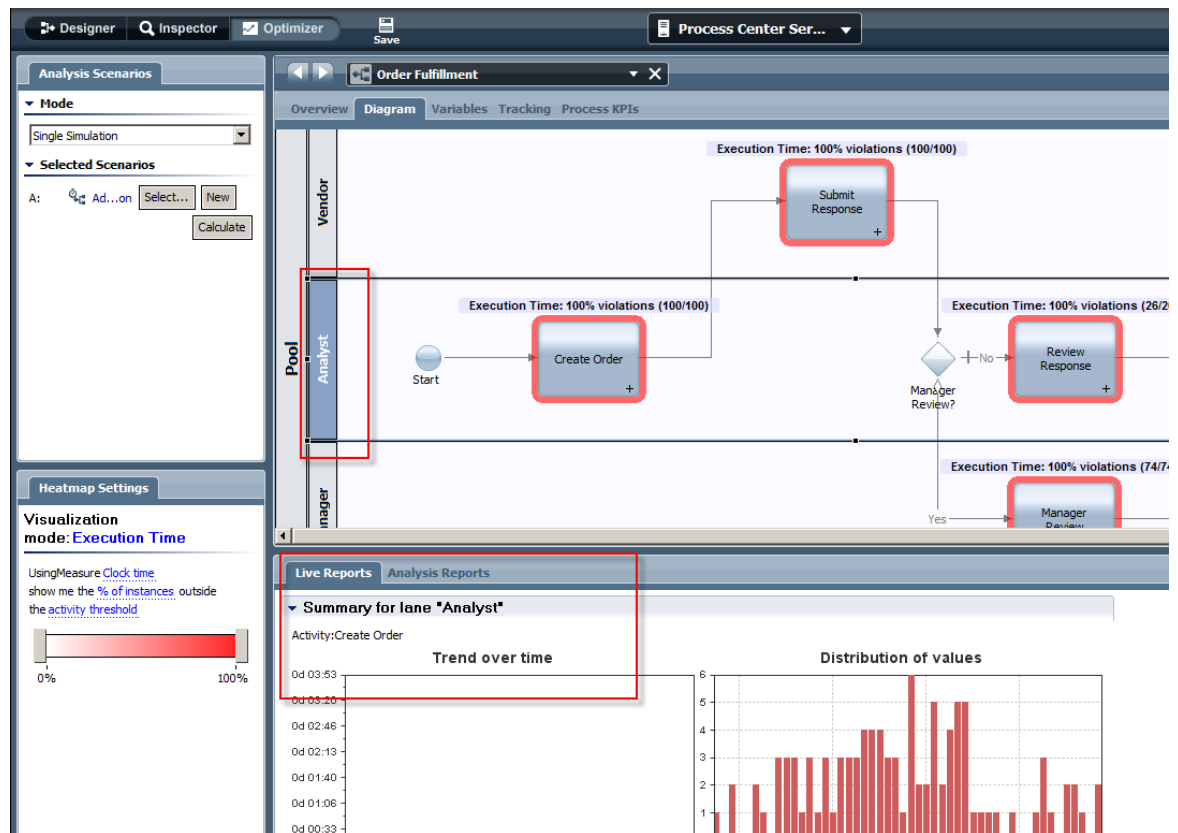


Section	Description
1	In the Analysis Scenarios, you can select the Mode, which can be: • Historical vs. Historical, • Historical vs. Simulation (How did I do), • Simulation vs. Historical (What if), • Simulation vs. Simulation, • Single Historical, and • Single Simulation. These different scenarios can be saved after you execute one of them. Simulation is used before you put the process in production, while historical is used once you have the process in production and you want to go down a process improvement path. In addition, you can compare Historical versus Historical (for example, June results versus December). Likewise, you could compare how you did versus how you thought you would do (Historical versus Simulation), you could do some what if analyses (Simulation versus Historical), and compare simulations (Simulation versus Simulation.)

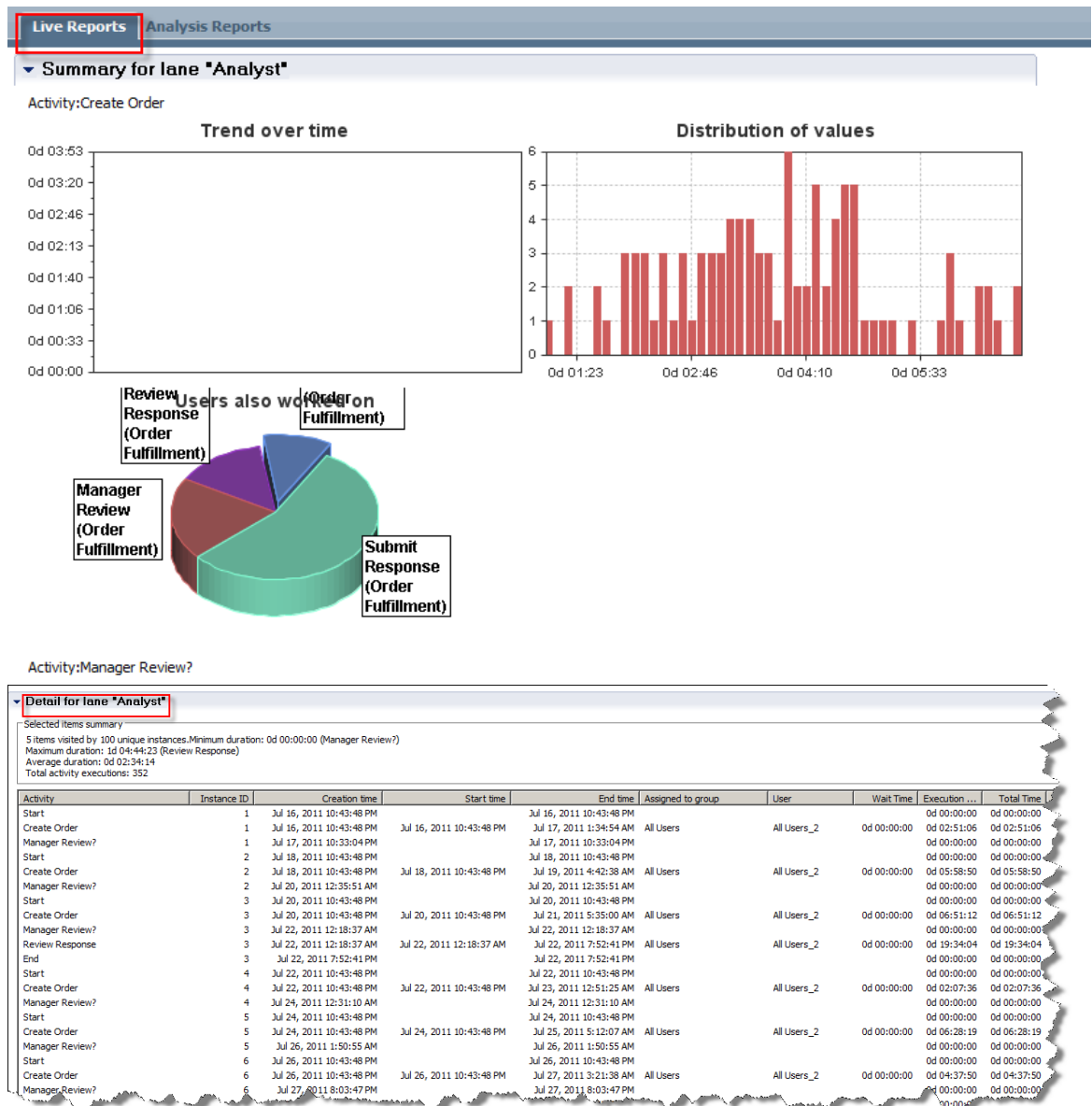
Section	Description
2	In the Heatmap Settings, you can select the Visualization Mode for the heat map diagram. The visualization modes can be: • Time based: ○ Wait Time (elapsed time from when Process Designer generates a task and when user starts working on it; claims it) ○ Execution Time (elapsed time from when user starts working on a task and when user finishes working on it) ○ Total Time = Wait Time + Execution Time ○ Efficiency (compares expected KPI vs. actual execution time) • Count based: ○ Waiting Activities (Count of tasks waiting to be worked on) ○ Executing Activities (Count of tasks in process; users have started working on them but have not completed them) ○ Completed Activities (Count of completed tasks) • Path based: ○ Happy Path (How often best case is taken through a process) ○ Exception Path (How often exception path is taken through a process) ○ Path (results for all paths (Happy and Exception paths)) • Metrics: ○ SLA (SLA violations per activity where they have been defined) ○ Rework (If an activity is executed more than once in a process instance)
3	The Optimizer displays a color-coded heat map to visually illustrate where bottlenecks and other problems exist in the processes included in your scenario, and how severe those issues are. The darker the halo around an activity, the closer it is to the high end of the scale or range that you specified in the Heatmap Settings view.

Section	Description
4	The data displayed in the Live Reports view depends upon the current editor and selection. For example, if you are examining a heat-mapped process diagram and you have selected an activity in that diagram (e.g. Manager Approval); the Live Reports view shows data specific to that activity. If you had selected the Process Designer process pool, it would show data of the entire process. Live Reports include charts for Instance Duration Trend, Instance Duration Histogram, and Users also worked on. Below these charts are section for Instance Analysis, KPI Analysis, and Activity Analysis.
5	The Smart Start view directs you to the activities and processes that deserve a closer look based on the most recently executed analysis scenario and the current visualization mode. The Smart Start view enables you to directly access: - Hotspots identified by the Optimizer when you run an analysis scenario - Processes and participant groups included in the most recently executed analysis scenario
6	The Recommendations view makes practical recommendations for addressing issues that are identified in your processes, and suggestions for how to optimize your process models. The recommendations may encourage you to examine other visualization modes to gain a better understanding of a particular pattern or behavior in your processes. Resolving identified issues can involve questions such as: - Would different resource allocations resolve my current bottlenecks? (Time and resource consumption) - Are my processes taking the paths that I expect them to? What changes will ensure that they do? (Path optimization) - How are my largest loans going through the process? How does that compare to my smaller loans? Why are very large loans always late? (Segment optimization) To get recommendations for a problematic Activity or other element in a process, click an element with a halo around it in the heat map.

- ___c. To get more details about participant group Analyst, click on **Analyst** swim lane, then go to **Live Reports**



- ___d. **Double-click** on the **Live Reports** tab. You can see the detailed report: not only the trend and distribution charts are available, but below the chart there is detailed data for each instance.

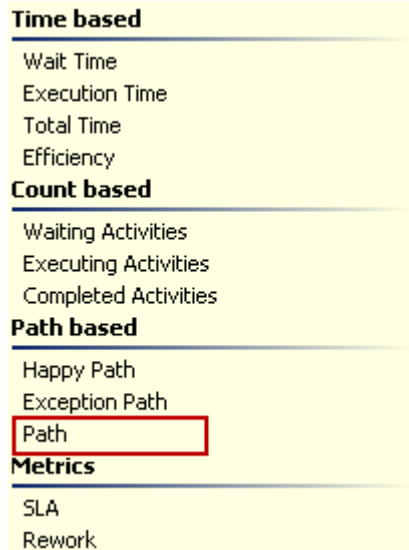


- ___e. **Double-click** on the **Live Reports** tab to minimize it.

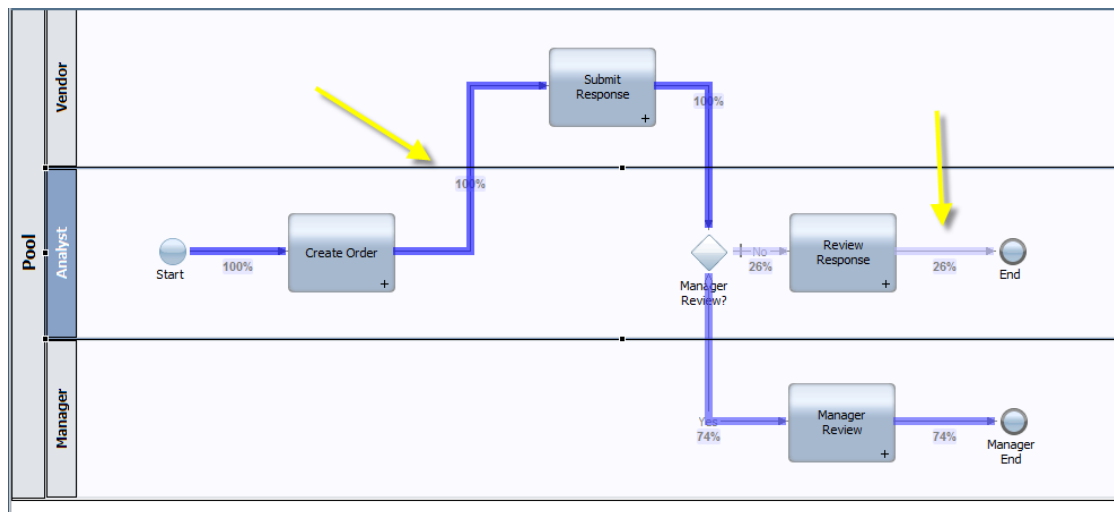
1.4.3 Show different heat maps

___7. Follow these steps to see different heat maps

___a. In the **Heatmap Settings**, change the **Visualization Mode** to **Path**



___b. The heat map will show the Path diagram, which shows both the Happy Path and the Exception Path, which are blue and red, respectively.



**How are Happy Path and Exception Path defined in the process?**

For each flow out of a decision gateway, you can click on each flow and set the **Line Type** to be of either **Happy Path** or **Exception Path**. In this case, the flow going into **Manager Review** was set as the **Happy Path**, while the flow going from the decision gateway to **Review Response** was set as the **Exception Path**.

Simulation lets you consider possible problem areas before you put a process into production. In the next section, we will move forward and assume that you put the process in production and you have some historical data in your performance data warehouse.

1.5 Summary

This concludes the Simulation lab which leverages the Optimizer Tool designed to help you understand and refine process models. The exercises should have helped you see how the Optimizer gives you visibility and insight into your business processes via simulation before you put your processes into production.